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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			LANGMAN, JONATHAN C	
			ART UNIT	PAPER NUMBER
			1784	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/566,652	Applicant(s) KANEKO ET AL.	
	Examiner JONATHAN C. LANGMAN	Art Unit 1784	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/25/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Independent claims 8, 11, and 13 recite that the “TaC layer comprises fibrous crystals grown in different directions”. Applicant points to page 22, lines 12-16, and Figure 9 for support of this claim limitation. However, these excerpts recite, “the fibrous crystals grow in the same direction in the same layer, and there is a layer in which the crystals grown in the direction different from the growing direction.” From this recitation, it appears that the fibrous crystals of the TaC layer grow in the same direction, and that fibrous crystals grown in different directions is in reference to two separate layers, contrary to what is being claimed. The examiner can not find and the applicant has not shown support for fibrous crystals within a single TaC layer growing in different directions.

Claims 9-10, 12, and 14-23 are rejected for being dependent upon a base rejected claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8-10, 13-17, and 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, rejected under 35 U.S.C. 103 (a) as being unpatentable over Douglass et al. (US 3,163,563).

In regards to claim 8, Douglass et al. teach an article that comprises tantalum or tantalum alloys. The article is molded to a desired shape and then carburized by known methods to provide a carbide layer of the desired thickness. The carburization takes place in a carbon crucible and in a methane atmosphere (col. 3, lines 1-20).

The applicant claims the article in a product by process form, wherein the process limitations include a vacuum heat treatment under a condition where a native oxide layer of Ta₂O₅ formed on a surface of the tantalum or tantalum alloy is sublimated to remove the Ta₂O₅; as well as heat treating the tantalum or tantalum alloy by introducing a carbon source into the vacuum heat treatment furnace to have carbon penetrate from the surface of the tantalum or tantalum alloy.

Douglass et al. are silent to these product by process claim limitations resulting in the removal through sublimation of the native oxide layer of Ta₂O₅. However the examiner takes two separate positions in regards to the Douglass et al. reference.

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The first position is that the processing conditions of a vacuum heat treatment and a heat treatment while introducing a carbon source as claimed, are substantially similar processing conditions to those disclosed by Douglass et al. Even though Douglass et al. do not mention the instantly claimed removal of native oxide Ta_2O_5 , it is inherent that this would occur in Douglass et al. It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a *prima facie* case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The ***prima facie*** case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

Douglass et al. teach elevated temperature heat treatments of 2300°C (Table 1) in the presence of methane and a carbon crucible in a reduced atmospheric pressure (vacuum). These processing parameters substantially overlap those process parameters instantly claimed as well as taught (instant specification page 10, lines 20-25) and therefore it is inherent that the native oxide, Ta_2O_5 , is removed.

The second position is that these parameters of a heat treatment to remove a native oxide, as well as a heat treatment in a vacuum in the presence of a carbon source are all product by process limitations that do not structurally distinguish themselves, from the prior art.

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.”, (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113)

The instant claims set forth a product with a final structure that comprises a tantalum carbide layer on a tantalum body with no intervening oxide. Douglass et al. do not teach an oxide layer is present. As seen in the figures there is an interface with no intervening layers between the carburized tantalum body and the tantalum carbide layers. Therefore it is the Examiner’s position that the structure of Douglass et al. is the same as the structure instantly claimed, wherein little to no patentable weight is given to the product by process limitations instantly claimed.

Douglass et al. are silent to the tantalum carbide material comprising a TaC layer formed by having the carbon penetrate the surface of the tantalum or tantalum alloy, and the TaC layer comprising fibrous crystals grown in different directions. However, as mentioned above, the tantalum or tantalum alloy of Douglass is carburized under similar

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conditions to those instantly claimed and taught, and therefore it is inherent that the tantalum carbide material comprising a TaC layer will have carbon penetrate the surface of the tantalum or tantalum alloy, and the TaC layer will inherently comprise fibrous crystals grown in different directions.

Regarding claims 9 and 14, the article of Douglass et al. is fully carburized, to include carburization in the bulk of the material, as described above, and therefore reads on the claims as presented.

Regarding claims 10 and 22, as seen in Figure 2, the carburization results in a first layer of Ta₂C and a second uppermost layer of TaC. This multilayer structure reads on the claimed structure.

Regarding claim 13, the claims set forth that the tantalum carbide material is an electrode. While there is no disclosure that the article of Douglass is an “electrode” as presently claimed, applicants attention is drawn to MPEP 2111.02 which states that “if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention’s limitations, then the preamble is not considered a limitation and is of no significance to claim construction”. Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of

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performing the intended use, then it meets the claim. Since the material of Douglass et al. is the same as instantly claimed, for reasons set forth above, it is said to anticipate the claims as instantly presented, even though Douglass et al. do not describe their material to be an electrode.

Regarding claim 15, the applicant sets forth that the electrode of tantalum carbide is a filament of the tantalum carbide or a heater of the tantalum carbide. These recitations are merely intended use and do not impart any structural limitations to the claims.

The recitation in the claims that the electrode is “a filament” or “a heater” is merely an intended use. Applicants attention is drawn to MPEP 2111.02 which states that intended use statements must be evaluated to determine whether the intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner's position that the intended use recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art and further that the prior art structure is capable of performing the intended use. Given that Douglass et al. disclose the same coated material as presently claimed, it is clear that the article of Douglass et al. would be capable of performing the intended use, i.e. being a filament or a heater, presently claimed as required in the above cited portion of the MPEP.

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Regarding claims 16 and 21, Douglass et al. teach elevated temperature heat treatments of 2300°C (Table 1) in the presence of methane and a carbon crucible in a reduced atmospheric pressure (vacuum). Although this temperature range is just outside the claimed range of less than 2300°C, it is the examiner's position that the instantly claimed structure will be inherent to the prior art, as it has been held that similar products made by similar processes will inherently possess similar characteristics.

Furthermore, these product by process limitations are given little patentable weight as the applicant discloses that the claimed structural features are obtained for heat treatments of 1860°C to 2500°C (instant specification, page 10, lines 20-25). Since Douglass teaches, as described above, a heat treatment at 2300°C it is inherent that they will have the same structural features, and therefore little patentable weight is given to the claimed product by process limitations, as they are said to not structurally define the claimed article from the prior art article.

Regarding claims 17 and 23 as seen in Figure 2, the TaC layer is thicker than the Ta₂C layer.

Claims 8-10, 13-16, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, rejected under 35 U.S.C. 103 (a) as being unpatentable over Lopez et al. (US 5,916,377).

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In regards to claim 8, Lopez et al. teach an article that comprises carburized tantalum or tantalum alloys (col. 3, lines 50-55). The carburization occurs under a vacuum wherein the furnace was evacuated and flushed with argon gas for 3 cycles in order to remove oxygen from the furnace. The carburization occurs at a temperature of 1700°C for about 10 hours (col. 4, lines 5-15). The carbon source in the vacuum is provided from a packed carbon powder.

The applicant claims the article in a product by process form, wherein the process limitations include a vacuum heat treatment under a condition where a native oxide layer of Ta₂O₅ formed on a surface of the tantalum or tantalum alloy is sublimated to remove the Ta₂O₅; as well as heat treating the tantalum or tantalum alloy by introducing a carbon source into the vacuum heat treatment furnace to have carbon penetrate from the surface of the tantalum or tantalum alloy.

Lopez et al. are silent to these product by process claim limitations resulting in the removal through sublimation of the native oxide layer of Ta₂O₅. However the examiner takes two separate positions in regards to the Lopez et al. reference.

The examiner takes two separate positions in regards to the Lopez et al. reference in order to teach or render obvious the instantly claimed structure.

The first position is that the processing conditions of a vacuum heat treatment to remove oxygen and a heat treatment while introducing a carbon source, are similar processing conditions to those disclosed by Lopez et al. as mentioned above. Even though Lopez et al. do not mention the instantly claimed removal of native oxide Ta₂O₅, it is inherent that this instant claim limitation would occur in Lopez et al. since they teach

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substantially the same processing techniques, as well as the evacuation of all oxygen from the furnace.

It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a prima facie case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The **prima facie** case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

Lopez et al. teach elevated temperature heat treatments of 1700°C for 10 hours in the presence of a carbon source in a reduced atmospheric pressure (vacuum), as well as the evacuation of oxides. These processing parameters substantially overlap those process parameters instantly claimed and therefore it is inherent that the native oxide, Ta₂O₅, is removed.

The second position is that these parameters of a heat treatment to remove a native oxide, as well as a heat treatment in a vacuum in the presence of a carbon source are all product by process limitations that do not structurally distinguish themselves, from the prior art.

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-

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by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.”, (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113).

The instant claims set forth a product with a final structure that comprises a tantalum carbide layer on a tantalum body with no intervening oxide. Lopez et al. do not teach an oxide layer is present and as seen in the figures there is a sharp interface between the carburized tantalum body and the tantalum carbide layers. Therefore it is the Examiner's position that the structure of Lopez et al. is the same as the structure instantly claimed, wherein little to no patentable weight is given to the product by process limitations instantly claimed.

Lopez et al. are silent to the tantalum carbide material comprising a TaC layer formed by having the carbon penetrate the surface of the tantalum or tantalum alloy, and the TaC layer comprising fibrous crystals grown in different directions. Lopez teaches a heat treatment at 1700°C under vacuum for 10 hours. Applicant teaches a heat treatment of 1800-2300°C under vacuum for 3 hours (instant specification, page 21). These processing parameters are substantially the same, as it is known in the art that heat treatments of lower temperatures but longer time periods will achieve similar

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results to heat treatments of higher temperatures and shorter time periods. Due to these similar processing conditions and similar materials, it is the examiners position that the prior art material will exhibit the same characteristics as instantly claimed. Therefore it is inherent that the tantalum carbide material comprising a TaC layer formed by having the carbon penetrate the surface of the tantalum or tantalum alloy, and the TaC layer comprising fibrous crystals grown in different directions.

Regarding claims 9 and 14, the article of Lopez et al. is fully carburized, to include carburization in the bulk of the material, as described above, and therefore reads on the claims as presented.

Regarding claims 10 and 22, the carburization results in a first layer of Ta₂C and a second uppermost layer of TaC (col. 4, lines 20-27). This multilayer structure reads on the instant structure of claim 10.

Regarding claim 13, the claims set forth that the tantalum carbide material is an electrode. While there is no disclosure that the article of Lopez is an "electrode" as presently claimed, applicants attention is drawn to MPEP 2111.02 which states that "if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction". Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference

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between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim. Since the material of Lopez et al. is the same as instantly claimed, for reasons set forth above, it is said to anticipate the claims as instantly presented, even though Lopez et al. do not describe their material to be an electrode.

Regarding claim 15, the applicant sets forth that the electrode of tantalum carbide is a filament of the tantalum carbide or a heater of the tantalum carbide. These recitations are merely intended use and do not impart any structural limitations to the claims.

The recitation in the claims that the electrode is "a filament" or "a heater" is merely an intended use. Applicants attention is drawn to MPEP 2111.02 which states that intended use statements must be evaluated to determine whether the intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner's position that the intended use recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art and further that the prior art structure is capable of performing the intended use. Given that Lopez et al. disclose the same coated material as presently claimed, it is clear that the article of Lopez et al. would be capable of performing the intended use,

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i.e. being a filament or a heater, presently claimed as required in the above cited portion of the MPEP.

Regarding claims 16 and 21, Lopez et al. teach elevated temperature heat treatments of 1700°C (Table 1) in the presence of a carbon source in a reduced atmospheric pressure (vacuum). Although this temperature range is just outside the claimed range of greater than 1860°C, Lopez teaches longer heat treatments, and therefore the final structure of Lopez will inherently have the same characteristics as instantly claimed. Product by process limitations are given little patentable weight, unless the applicant shows that a structural difference between the claimed structure and that of the prior art.

Claims 8, 9, 13-16 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Garg et al. (US 5,126,206).

Garg et al. teach a tantalum electrode, which is a filament that is carburized through a process that involves a two step heat treatment as instantly claimed. The first heating step includes a heat treatment in a vacuum at 1800 °C. The second heat treatment involves a temperature of 2100°C for 12 hours, in the presence of a carbon source (CH₄) (col. 10, lines 44-65).

Garg et al. are silent to the removal of Ta₂O₅ during the first heat treatment. However, it has been held that where the claimed and prior art products are identical or

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substantially identical in structure or are produced by identical or a substantially identical processes, a prima facie case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The ***prima facie*** case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

Since this heat treatment taught by Garg is similar to the heat treatment instantly claimed, it is inherent that the tantalum filament will behave in the same manner as instantly claimed, i.e. Ta₂O₅ will be removed from the surface of the Ta filament. And furthermore it is inherent that the entire Ta filament in all areas will be penetrated with carbon.

A second position in view of Garg, is that these instantly claimed parameters of a heat treatment to remove a native oxide, as well as a heat treatment in a vacuum in the presence of a carbon source are all product by process limitations that do not structurally distinguish themselves, from the prior art.

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.”, (*In re Thorpe*, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show

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that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113).

The instant claims set forth a product with a final structure that comprises a tantalum carbide layer on a tantalum body with no intervening oxide. Garg et al. do not teach an oxide layer is present and teach that the surface is carburized well. Therefore it is the Examiner's position that the structure of Garg et al. is the same as the structure instantly claimed, wherein little to no patentable weight is given to the product by process limitations instantly claimed.

Garg et al. are silent to the tantalum carbide material comprising a TaC layer formed by having the carbon penetrate the surface of the tantalum or tantalum alloy, and the TaC layer comprising fibrous crystals grown in different directions. However, as mentioned above, the tantalum or tantalum alloy of Garg is carburized under similar conditions to those instantly claimed and taught, and therefore it is inherent that the tantalum carbide material comprising a TaC layer formed by having the carbon penetrate the surface of the tantalum or tantalum alloy, and the TaC layer comprising fibrous crystals grown in different directions.

Regarding claims 16 and 21, the heat treatment of 2100°C falls within the claimed range of 1860°C to 2300°C. Although Garg et al. do not teach a specific pressure, this limitation is a product by process limitation that is given little patentable

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weight. Garg teaches similar elevated heat treatments of the same materials claimed, and therefore the carburized tantalum filament will for reasons mentioned above have the same structure as claimed, and therefore little to no patentable weight is given to the product by process limitations.

Response to Arguments

Douglass

Applicant argues on page 8 of the remarks submitted July 15, 2010, that Douglass et al. does not disclose a tantalum carbide material comprising a TaC layer having fibrous crystals grown in different directions.

These arguments are not found persuasive. The applicant has not provided evidence on the record showing that the tantalum and tantalum alloy carburized under the conditions taught by Douglass et al., would not have fibrous crystals grown in different directions. Since Douglass teaches similar heating conditions to those taught it is the examiners position that the structure of Douglass will inherently possess the claimed characteristics.

Applicants argue that Douglass's heat treatment of 2300°C is not within the claimed range of 1860°C and less than 2300°C (see new claim 16). However, the applicant is claiming a final product in product by process form. It is the examiners position that a heat treatment of 2300°C will not result in a structural difference between the claimed heat treatment at 1860 and less than 2300°C.

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Applicants argue that the newly submitted declaration demonstrates that the composite structure of Douglass et al. does not have a TaC layer on the surface of the tantalum alloy but has a thermally decomposed carbon layer on the surface of the tantalum alloy.

The examiner does not find the declaration persuasive, as the thermally decomposed carbon layer on the tantalum surface is drawn to Experiment II of the declaration, wherein Experiment II is not performed at the same heat treatment taught by Douglass et al. The declaration is not persuasive as it is not a comparison of the prior art of record.

Lopez

Applicant argues that Lopez does not disclose or suggest a tantalum carbide material comprising a TaC layer having fibrous crystals grown in different directions on a surface of a tantalum or tantalum alloy.

It is the examiners position that this feature is inherent to the structure of Lopez, as Lopez discloses, for reasons mentioned above, similar processing conditions to those claimed, and therefore will inherently possess the same characteristics as claimed.

Murakawi

The rejections over Murakawi are withdrawn in light of the claim amendments to include a TaC layer comprising fibrous crystals grown in different directions. Murakawi

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teaches sputtering or codeposition of tantalum and carbide, and not a surface carburization of a tantalum layer. Therefore Murakawi does not disclose or suggest a TaC layer comprising fibrous crystals grown in different directions.

Garg

Applicants argue on page 9, that Garg discloses a coated substrate comprised of a parent substrate and a polycrystalline diamond layer (see claim 1). And that Garg fails to disclose a tantalum carbide material comprising a TaC layer having fibrous crystals grown in different directions on a surface of t a tantalum or tantalum alloy.

Garg is not relied upon solely for its disclosure as stated in claim 1 of the reference. Garg is relied upon for its teaching of carburizing tantalum filaments, as described in the rejection above. Garg teaches substantially the same process limitations as described above, and therefore will inherently have the same characteristics as claimed, i.e. a tantalum carbide material comprising a TaC layer having fibrous crystals grown in different directions on a surface of t a tantalum or tantalum alloy.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN C. LANGMAN whose telephone number is (571)272-4811. The examiner can normally be reached on Mon-Thurs 8:00 am - 6:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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